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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/824,361	04/02/2001	Takahiro Watanabe	36856.450	4793

7590 04/07/2004  
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EXAMINER

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ART UNIT	PAPER NUMBER
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2682

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DATE MAILED: 04/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/824,361

Applicant(s)

WATANABE ET AL.

Examiner

Raymond B. Persino

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– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 5 & 6.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_.

**DETAILED ACTION**

***Claim Rejections - 35 USC § 112***

1. Claim 12 recites the limitation "the high-pass filter ". There is insufficient antecedent basis for this limitation in the claim.

***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over ZARGARI (US 6,351,502 B1) in view of GILLIG et al (US 4,989,230 A).

Regarding claims 1 and 23, ZARGARI discloses a high-frequency module comprising: a high-frequency filter (101 of figure 1) arranged to attenuate a spurious high-frequency signal; a high-frequency switch (102 of figure 1) arranged to switch a transmission signal and a reception signals; a transmitter-side balun (104 of figure 1) arranged to convert a balanced signal into an unbalanced signal; and a receiver-side balun (103 of figure 1) arranged to convert an unbalanced signal into a balanced signal; wherein said high-frequency filter is disposed between an antenna (100 of figure 1) and a first terminal of said high-frequency switch, a second terminal of said high-frequency switch is connected to an unbalanced terminal of said transmitter-side balun, a third

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terminal of said high-frequency switch is connected to an unbalanced terminal of said receiver-side balun (see figure 1 and column 3 line 7-19). However, ZARGARI does not disclose that the high-frequency filter is a high-pass filter. GILLIG et al discloses using a high-pass filter between an antenna and a transceiver (column 2 lines 58-63).

Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use a high-pass filter as the high-frequency filter. The choice filter characteristics is a routine engineering decision predicated on the type of hardware used and the operating environment that results from the regulation of the frequency spectrum. In this case, the use of a high-pass filter is beneficial in that it prevents undesired signals below a predetermined frequency from affecting the transceiver.

3. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over ZARGARI (US 6,351,502 B1) in view of GILLIG et al (US 4,989,230 A) and further in view of an examiner's official notice.

Regarding claim 2, see the rejection of the parent claim concerning the subject matter this claim depends from. However, the prior art used in the rejection of the parent claim doesn't explicitly disclose that the high-pass filter attenuates transmission and reception signals of GSM in the 900 MHz band, DCS in the 1.8 GHz band, and PCS in the 1.9 GHz band. Nevertheless, the examiner takes official notice that it was known in the art at the time the invention was made for the filtering of transmission and reception signals to be based upon regulated frequency bands. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made for the high-pass filter to attenuate transmission and reception signals of GSM in

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the 900 MHz band, DCS in the 1.8 GHz band, and PCS in the 1.9 GHz band. The choice filter characteristics is a routine engineering decision predicated on the type of hardware used and the operating environment that results from the regulation of the frequency spectrum.

4. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over ZARGARI (US 6,351,502 B1) in view of GILLIG et al (US 4,989,230 A) and further in view of FURUTANI et al (US 2002/0127973 A1).

Regarding claim 3, see the rejection of the parent claim concerning the subject matter this claim depends from. However, the prior art used in the rejection of the parent claim doesn't explicitly disclose that high-frequency switch attenuates the third harmonic of reception signal of a 2.4 GHz communication system. FURUTANI et al discloses that that the high-frequency switch attenuates the third harmonic of reception signal (paragraph 96). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made for the high-frequency switch to attenuate the third harmonic of reception signal. This is beneficial in that it prevents undesired signals from affecting the transceiver.

5. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over ZARGARI (US 6,351,502 B1) in view of GILLIG et al (US 4,989,230 A) and further in view of ERICKSON (US 5,862,466 A).

Regarding claim 4, see the rejection of the parent claim concerning the subject matter this claim depends from. However, the prior art used in the rejection of the parent claim doesn't explicitly disclose that the balun attenuates the second harmonic of

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the reception signal. ERICKSON discloses a balun that attenuates the second harmonic of a reception signal (column 3 lines 18-31). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made for the balun to attenuate the second harmonic of the reception signal. This is beneficial in that it prevents undesired signals from affecting the transceiver.

6. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over ZARGARI (US 6,351,502 B1) in view of GILLIG et al (US 4,989,230 A) and further in view of HIRAKA et al (US 6,366,563 B1)

Regarding claim 5, see the rejection of the parent claim concerning the subject matter this claim depends from. However, the prior art used in the rejection of the parent claim doesn't explicitly disclose that the high-pass filter includes at least one inductor and at least one capacitor. HIRAKA et al discloses a high-pass filter that includes at least one inductor and at least one capacitor (column 1 line 61 to column 2 line 7). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made for a high-pass filter to include at least one inductor and at least one capacitor. Since the prior art used in the rejection of the parent claim is silent as to the structure of the high-pass filter, one wishing to practice the teaching would be forced to seek out a prior art high-pass filter. A filter that includes at least one inductor and at least one capacitor is prior art filter that would function as the required high-pass filter.

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7. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over ZARGARI (US 6,351,502 B1) in view of GILLIG et al (US 4,989,230 A) and further in view of KUSHITANI et al (US 6,496,083 B1).

Regarding claim 6, see the rejection of the parent claim concerning the subject matter this claim depends from. However, the prior art used in the rejection of the parent claim doesn't explicitly disclose that the high-frequency switch includes at least one diode, at least one inductor, at least one capacitor, and at least one resistor. KUSHITANI et al discloses a high-frequency switch that includes at least one diode, at least one inductor, at least one capacitor, and at least one resistor (column 5 lines 23-30). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made for a high-frequency switch to include at least one diode, at least one inductor, at least one capacitor, and at least one resistor. Since the prior art used in the rejection of the parent claim is silent as to the structure of the high-frequency switch, one wishing to practice the teaching would be forced to seek out a prior art high-frequency switch. A high-frequency switch that includes at least one inductor and at least one capacitor is prior art filter that includes at least one diode, at least one inductor, at least one capacitor, and at least one resistor would function as the required high-frequency switch.

8. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over ZARGARI (US 6,351,502 B1) in view of GILLIG et al (US 4,989,230 A) and further in view of FURUTANI et al (US 6,100,776 A).

Regarding claim 7, see the rejection of the parent claim concerning the subject matter this claim depends from. The subject matter of the circuit elements and their connections are discussed in the parent claim, however their arrangement in a multilayer substrate is not explicitly disclose by the prior art used in the rejection of the parent claim. FURUTANI et al discloses a multilayer substrate including a laminated body having a plurality of dielectric layers wherein the electrical connections between circuit elements are achieved within the multilayer substrate (column 4 line 52 to column 6 line 22). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made for a multilayer substrate including a laminated body having a plurality of dielectric layers wherein the electrical connections between circuit elements are achieved within the multilayer substrate. The use of a multilayer substrate including a laminated body having a plurality of dielectric layers is beneficial in that it reduces the size and weight while gaining performance improvements.

9. Claims 8 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over ZARGARI (US 6,351,502 B1) in view of KE et al (US 6,658,263 B1).

Regarding claims 8 and 24, ZARGARI discloses a high-frequency module comprising: a high-frequency filter (101 of figure 1) arranged to attenuate a spurious high-frequency signal; a high-frequency switch (102 of figure 1) for switching a transmission signal and a reception signal; a transmitter-side balun (104 of figure 1) for converting a balanced signal into an unbalanced signal; and a receiver-side balun (103 of figure 1) for converting an unbalanced signal into a balanced signal; wherein said high-frequency filter is disposed between an antenna (100 of figure 1) and a first



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terminal of said high-frequency switch, a second terminal of said high-frequency switch is connected to an unbalanced terminal of said transmitter-side balun, a third terminal of said high-frequency switch is connected to an unbalanced terminal of said receiver-side balun (see figure 1 and column 3 line 7-19). However, ZARGARI does not disclose that the high-frequency filter is a notch filter. KE et al discloses using a notch filter between an antenna and a transceiver (column 6 lines 6-19). Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use a notch filter as the high-frequency filter. The choice filter characteristics is a routine engineering decision predicated on the type of hardware used and the operating environment that results from the regulation of the frequency spectrum. In this case, the use of a high-pass filter is beneficial in that it prevents undesired signals at a specific frequency from affecting the transceiver.

10. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over ZARGARI (US 6,351,502 B1) in view of KE et al (US 6,658,263 B1) and further in view of an examiner's official notice.

Regarding claim 9, see the rejection of the parent claim concerning the subject matter this claim depends from. However, the prior art used in the rejection of the parent claim doesn't explicitly disclose that the high-pass filter attenuates transmission and reception signals of GSM in the 900 MHz band, DCS in the 1.8 GHz band, and PCS in the 1.9 GHz band. Nevertheless, the examiner takes official notice that it was known in the art at the time the invention was made for the filtering of transmission and reception signals to be based upon regulated frequency bands. Therefore, it would

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have been obvious to a person of ordinary skill in the art at the time the invention was made for the high-pass filter to attenuate transmission and reception signals of GSM in the 900 MHz band, DCS in the 1.8 GHz band, and PCS in the 1.9 GHz band. The choice filter characteristics is a routine engineering decision predicated on the type of hardware used and the operating environment that results from the regulation of the frequency spectrum.

11. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over ZARGARI (US 6,351,502 B1) in view of KE et al (US 6,658,263 B1) and further in view of an examiner's official notice.

Regarding claim 10, see the rejection of the parent claim concerning the subject matter this claim depends from. However, the prior art used in the rejection of the parent claim doesn't explicitly disclose that the high-pass filter attenuates transmission and reception signals of GSM in the 900 MHz band, DCS in the 1.8 GHz band, and PCS in the 1.9 GHz band. Nevertheless, the examiner takes official notice that it was known in the art at the time the invention was made for the filtering of transmission and reception signals to be based upon regulated frequency bands. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made for the high-pass filter to attenuate transmission and reception signals of GSM in the 900 MHz band, DCS in the 1.8 GHz band, and PCS in the 1.9 GHz band. The choice filter characteristics is a routine engineering decision predicated on the type of hardware used and the operating environment that results from the regulation of the frequency spectrum.

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12. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over ZARGARI (US 6,351,502 B1) in view of KE et al (US 6,658,263 B1) and further in view of ERICKSON (US 5,862,466 A).

Regarding claim 11, see the rejection of the parent claim concerning the subject matter this claim depends from. However, the prior art used in the rejection of the parent claim doesn't explicitly disclose that the balun attenuates the second harmonic of the reception signal. ERICKSON discloses a balun that attenuates the second harmonic of a reception signal (column 3 lines 18-31). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made for the balun to attenuate the second harmonic of the reception signal. This is beneficial in that it prevents undesired signals from affecting the transceiver.

13. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over ZARGARI (US 6,351,502 B1) in view of KE et al (US 6,658,263 B1) and further in view of HIRAKA et al (US 6,366,563 B1)

Regarding claim 12, see the rejection of the parent claim concerning the subject matter this claim depends from. However, the prior art used in the rejection of the parent claim doesn't explicitly disclose that the high-pass filter includes at least one inductor and at least one capacitor. HIRAKA et al discloses a high-pass filter that includes at least one inductor and at least one capacitor (column 1 line 61 to column 2 line 7). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made for a high-pass filter to include at least one inductor and at least one capacitor. Since the prior art used in the rejection of the parent claim is

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silent as to the structure of the high-pass filter, one wishing to practice the teaching would be forced to seek out a prior art high-pass filter. A filter that includes at least one inductor and at least one capacitor is prior art filter that would function as the required high-pass filter.

14. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over ZARGARI (US 6,351,502 B1) in view of KE et al (US 6,658,263 B1) and further in view of KUSHITANI et al (US 6,496,083 B1).

Regarding claim 13, see the rejection of the parent claim concerning the subject matter this claim depends from. However, the prior art used in the rejection of the parent claim doesn't explicitly disclose that the high-frequency switch includes at least one diode, at least one inductor, at least one capacitor, and at least one resistor. KUSHITANI et al discloses a high-frequency switch that includes at least one diode, at least one inductor, at least one capacitor, and at least one resistor (column 5 lines 23-30). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made for a high-frequency switch to include at least one diode, at least one inductor, at least one capacitor, and at least one resistor. Since the prior art used in the rejection of the parent claim is silent as to the structure of the high-frequency switch, one wishing to practice the teaching would be forced to seek out a prior art high-frequency switch. A high-frequency switch that includes at least one inductor and at least one capacitor is prior art filter that includes at least one diode, at least one inductor, at least one capacitor, and at least one resistor would function as the required high-frequency switch.

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15. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over ZARGARI (US 6,351,502 B1) in view of KE et al (US 6,658,263 B1) and further in view of FURUTANI et al (US 6,100,776 A).

Regarding claim 14, see the rejection of the parent claim concerning the subject matter this claim depends from. The subject matter of the circuit elements and their connections are discussed in the parent claim, however their arrangement in a multilayer substrate is not explicitly disclosed by the prior art used in the rejection of the parent claim. FURUTANI et al discloses a multilayer substrate including a laminated body having a plurality of dielectric layers wherein the electrical connections between circuit elements are achieved within the multilayer substrate (column 4 line 52 to column 6 line 22). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made for a multilayer substrate including a laminated body having a plurality of dielectric layers wherein the electrical connections between circuit elements are achieved within the multilayer substrate. The use of a multilayer substrate including a laminated body having a plurality of dielectric layers is beneficial in that it reduces the size and weight while gaining performance improvements.

16. Claims 15 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over ZARGARI (US 6,351,502 B1) in view of GILLIG et al (US 4,989,230 A), KE et al (US 6,658,263 B1) and KITAZAWA et al (US 6,147,571 A).

Regarding claims 15 and 25, ZARGARI discloses a high-frequency module comprising: a high-frequency filter (101 of figure 1) arranged to attenuate spurious high-frequency signal; a high-frequency switch (102 of figure 1) arranged to switch a

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transmission signal and a reception signal; a transmitter-side balun (104 of figure 1) arranged to convert a balanced signal into an unbalanced signal; and a receiver-side balun (103 of figure 1) arranged to convert an unbalanced signal into a balanced signal; wherein said high-frequency filter is disposed between an antenna and a first terminal of said high-frequency switch, a second terminal of said high-frequency switch is connected to an unbalanced terminal of said transmitter-side balun, a third terminal of said high-frequency switch is connected to an unbalanced terminal of said receiver-side balun (see figure 1 and column 3 line 7-19). However, ZARGARI does not disclose that the high-frequency filter is one of a high-pass filter and a notch filter that the high-frequency module further comprises a multilayer substrate including a laminated body having a plurality of dielectric layers. GILLIG et al discloses using a high-pass filter between an antenna and a transceiver (column 2 lines 58-63). KE et al discloses using a notch filter between an antenna and a transceiver (column 2 lines 58-63). KITAZAWA et al discloses a multilayer substrate including a laminated body having a plurality of dielectric layers (column 2 lines 15-38). Therefore it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use one of a high-pass filter and a notch filter as a high-frequency filter and to use a multilayer substrate including a laminated body having a plurality of dielectric layers. The choice filter characteristics is a routine engineering decision predicated on the type of hardware used and the operating environment that results from the regulation of the frequency spectrum. In this case, the use of a high-pass filter is beneficial in that it prevents undesired signals below a predetermined frequency from affecting the transceiver.

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Also, the use of a high-pass filter is beneficial in that it prevents undesired signals at a specific frequency from affecting the transceiver. The use of a multilayer substrate for a filter including a laminated body having a plurality of dielectric layers is beneficial in that it reduces the size and weight while gaining performance improvements.

17. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over ZARGARI (US 6,351,502 B1) in view of GILLIG et al (US 4,989,230 A), KE et al (US 6,658,263 B1) and KITAZAWA et al (US 6,147,571 A) and further in view of FURUTANI et al (US 6,100,776 A).

Regarding claim 16, see the rejection of the parent claim concerning the subject matter this claim depends from. The subject matter of the circuit elements and their connections are discussed in the parent claim, however their arrangement in a multilayer substrate is not explicitly disclosed by the prior art used in the rejection of the parent claim. FURUTANI et al discloses a multilayer substrate including a laminated body having a plurality of dielectric layers wherein the electrical connections between circuit elements are achieved within the multilayer substrate (column 4 line 52 to column 6 line 22). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made for a multilayer substrate including a laminated body having a plurality of dielectric layers wherein the electrical connections between circuit elements are achieved within the multilayer substrate. The use of a multilayer substrate including a laminated body having a plurality of dielectric layers is beneficial in that it reduces the size and weight while gaining performance improvements.

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18. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over ZARGARI (US 6,351,502 B1) in view of GILLIG et al (US 4,989,230 A), KE et al (US 6,658,263 B1) and KITAZAWA et al (US 6,147,571 A) and further in view of an examiner's official notice.

Regarding claim 17, see the rejection of the parent claim concerning the subject matter this claim depends from. However, the prior art used in the rejection of the parent claim doesn't explicitly disclose that the high-pass filter attenuates transmission and reception signals of GSM in the 900 MHz band, DCS in the 1.8 GHz band, and PCS in the 1.9 GHz band. Nevertheless, the examiner takes official notice that it was known in the art at the time the invention was made for the filtering of transmission and reception signals to be based upon regulated frequency bands. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made for the high-pass filter to attenuate transmission and reception signals of GSM in the 900 MHz band, DCS in the 1.8 GHz band, and PCS in the 1.9 GHz band. The choice filter characteristics is a routine engineering decision predicated on the type of hardware used and the operating environment that results from the regulation of the frequency spectrum.

19. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over ZARGARI (US 6,351,502 B1) in view of GILLIG et al (US 4,989,230 A), KE et al (US 6,658,263 B1) and KITAZAWA et al (US 6,147,571 A) and further in view of FURUTANI et al (US 2002/0127973 A1).



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Regarding claim 18, see the rejection of the parent claim concerning the subject matter this claim depends from. However, the prior art used in the rejection of the parent claim doesn't explicitly disclose that high-frequency switch attenuates the third harmonic of reception signal of a 2.4 GHz communication system. FURUTANI et al discloses that that the high-frequency switch attenuates the third harmonic of reception signal (paragraph 96). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made for the high-frequency switch to attenuate the third harmonic of reception signal. This is beneficial in that it prevents undesired signals from affecting the transceiver.

20. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over ZARGARI (US 6,351,502 B1) in view of GILLIG et al (US 4,989,230 A), KE et al (US 6,658,263 B1) and KITAZAWA et al (US 6,147,571 A) and further in view of ERICKSON (US 5,862,466 A).

Regarding claim 19, see the rejection of the parent claim concerning the subject matter this claim depends from. However, the prior art used in the rejection of the parent claim doesn't explicitly disclose that the balun attenuates the second harmonic of the reception signal. ERICKSON discloses a balun that attenuates the second harmonic of a reception signal (column 3 lines 18-31). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made for the balun to attenuate the second harmonic of the reception signal. This is beneficial in that it prevents undesired signals from affecting the transceiver.

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21. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over ZARGARI (US 6,351,502 B1) in view of GILLIG et al (US 4,989,230 A), KE et al (US 6,658,263 B1) and KITAZAWA et al (US 6,147,571 A) and further in view of KUSHITANI et al (US 6,496,083 B1).

Regarding claim 20, see the rejection of the parent claim concerning the subject matter this claim depends from. However, the prior art used in the rejection of the parent claim doesn't explicitly disclose that the high-frequency switch includes at least one diode, at least one inductor, at least one capacitor, and at least one resistor. KUSHITANI et al discloses a high-frequency switch that includes at least one diode, at least one inductor, at least one capacitor, and at least one resistor (column 5 lines 23-30). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made for a high-frequency switch to include at least one diode, at least one inductor, at least one capacitor, and at least one resistor. Since the prior art used in the rejection of the parent claim is silent as to the structure of the high-frequency switch, one wishing to practice the teaching would be forced to seek out a prior art high-frequency switch. A high-frequency switch that includes at least one inductor and at least one capacitor is prior art filter that includes at least one diode, at least one inductor, at least one capacitor, and at least one resistor would function as the required high-frequency switch.

22. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over ZARGARI (US 6,351,502 B1) in view of GILLIG et al (US 4,989,230 A), KE et al (US

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6,658,263 B1) and KITAZAWA et al (US 6,147,571 A) and further in view of FURUTANI et al (US 6,100,776 A).

Regarding claim 21, see the rejection of the parent claim concerning the subject matter this claim depends from. The subject matter of the circuit elements and their connections are discussed in the parent claim, however their arrangement in a multilayer substrate is not explicitly disclose by the prior art used in the rejection of the parent claim. FURUTANI et al discloses a multilayer substrate including a laminated body having a plurality of dielectric layers wherein the electrical connections between circuit elements are achieved within the multilayer substrate (column 4 line 52 to column 6 line 22). Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made for a multilayer substrate including a laminated body having a plurality of dielectric layers wherein the electrical connections between circuit elements are achieved within the multilayer substrate. The use of a multilayer substrate including a laminated body having a plurality of dielectric layers is beneficial in that it reduces the size and weight while gaining performance improvements.

### ***Conclusion***

23. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. WATANABE et al (US 6,633,748 B1)

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond B. Persino whose telephone number is (703)

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308-7528. The examiner can normally be reached on Monday-Thursday from 8:00 AM to 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian C. Chin can be reached on (703) 308-6739. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

RP

Raymond B. Persino *RP*  
Examiner  
Art Unit 2682

*[Signature]*  
VIVIAN CHIN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600

*4/5/04*